REMARKS/ARGUMENTS

Claims 1-22 are pending. In an office action mailed March 24, 2004 (Paper no. 9), claims 1-8, 11-13 and 19-20 were rejected under 35 U.S.C. 102(e) as allegedly being anticipated by Koh. Claims 10, 14-15, and 21-22 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Koh. Claims 9 and 16-18 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Koh in view of Binkley. The rejections are respectfully traversed.

The Applicants note that the Examiner has improperly identified Koh as U.S. Patent 6,397,044, when in fact that is the number of Nash et al. The correct number for Koh is believed to be 6,104,745. Applicants respectfully request the Examiner to be more careful in preparing any office actions.

35 USC §102 Rejections

Koh fails to provide a basis for the rejection of claims 1-8, 11-13 and 19-20 under 35 U.S.C. § 102, because it fails to disclose each element of the claimed invention. For example, claim 1 includes "a direct-conversion receiver receiving a signal modulated on a carrier frequency signal, the direct-conversion receiver further comprising one or more subharmonic local oscillator mixers; a local oscillator coupled to the direct conversion receiver, the local oscillator generating a signal having a frequency equal to a subharmonic of the carrier frequency signal; and a transmitter coupled to the local oscillator, wherein the local oscillator is the transmitter oscillator." It is alleged that the phase-locked loop 230 of Koh is an oscillator, but this is incorrect. While a phase-locked loop includes an oscillator, it is improper to reject a claim over a reference that performs the same function using a greater number of elements. Koh fails to realize that the added complexity of a phase-locked loop is not required to make the system operable. In addition, as shown in the exemplary embodiments of Figures 4 and 5, and reflected in claims 9, 10, 17 and 18, a phase-locked loop can be added to provide additional frequency stability where needed. While the Examiner has relied on Koh to reject claim 10 under 35 U.S.C. 103, there are several problems with that rejection. First and foremost, the reference numbers provided by the Examiner (22, 30, 40, etc.) are not shown in Koh, leading the Applicants to suspect that the Examiner has not only mis-identified the patent number of the reference, but also the name of the reference. Perhaps the Examiner meant to reject

claims 1, 14-15, and 21-22 under 35 U.S.C. 103(a) in view of Nash? However, if this is the case, then the previous rejection of these claims under 35 U.S.C. 103(a) over Nash in view of Na was not actually withdrawn, only broadened. Second, if the phase-locked loop of Koh is the oscillator, then it cannot also be the phase-locked loop of claims 9, 10, 17, and 18. In any event, the fact stands that a phase-locked loop is not an oscillator. For example, a phase-locked loop that is not being used to transmit a signal can operate at lower power levels, such that by switching the phase-locked loop to lock the oscillator as claimed in claims 9 and 17, a power savings can be realized over operating a phase-locked loop continuously at transmit power levels even when it is only being used as a receiver.

The problems with equating a phase-locked loop with an oscillator are further demonstrated by the rejection of claims 5 and 6 over Koh, and the Examiner's assertion that phase locked loop 33 (again noting that there is no phase locked loop 33 shown in Koh 6,104,745) "act as Multiplier." While a phase-locked loop can include a multiplier, the phase-locked loop shown in Koh is not shown to include a multiplier, and as such, Koh fails to provide basis for the rejection because it lacks all of the elements of the claimed invention. Furthermore, it is clear that the multiplier of claims 5 and 6 is external to oscillator – if the phase locked loop is equated with the oscillator, then it cannot also be used to provide the multiplier. Finally, the output of the phase locked loop of Koh is necessarily applied to both the receiver and transmitter (since the multiplier is contained internal to the phase locked loop), whereas claim 5 includes "a frequency multiplier coupled between the local oscillator and the transmitter, wherein the frequency multiplier increases the frequency of the oscillator," and claim 6 includes the "system of claim 5 wherein the frequency multiplier increases the frequency of the oscillator up to the frequency of the carrier signal." Assuming *arguendo* that an internal multiplier is even present, the internal multiplier of the phase locked loop of Koh is simply unable to be coupled between the local oscillator and the transmitter and to increase the frequency of the oscillator up to the frequency of the carrier signal.

Likewise, claim 11 includes "receiving a carrier signal modulated with a data signal; mixing the carrier signal with a subharmonic local oscillator signal to extract a baseband signal; multiplying the subharmonic local oscillator signal; and modulating an outgoing data signal with the multiplied subharmonic local oscillator signal." Koh fails to provide these steps, as it only discloses a phase-locked loop which presumably has internal multiplication of an oscillator signal that would be

provided to both the receiver and transmitter, and not a stand-alone oscillator.

In regards to claim 20, Koh not only fails to disclose an oscillator, as described above, it also fails to disclose "a modulator coupled to the local oscillator, the modulator receiving an outgoing data signal and modulating the outgoing data signal onto the local oscillator signal to generate an outgoing modulated carrier signal." Instead, the output from the phase locked loop is mixed with the data signal. As such, the modulator is not coupled to an oscillator but rather to a phase locked loop. While a phase locked loop may contain an oscillator, Koh fails to provide any such details, such that the other components of the phase locked loop of Koh may be what is coupled to the modulator.

Rejections under 35 U.S.C. 103

As previously noted, the rejections under 35 U.S.C. 103 cannot be adequately reviewed, because the name and patent number of the cited reference does not match the discussion of that reference in the rejection. However, Applicants note that the Examiner has improperly applied official notice for a number of the rejections. According to M.P.E.P. 2144.03(A), it is "never appropriate to rely solely on 'common knowledge' in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based." Thus, where the Examiner states in regards to claims 10 and 14-15 that "Frequency Modulation is a common way of modulating frequencies," this is not only circular logic, it also fails to address that the frequency modulator is "coupled to the local oscillator, where the local oscillator is modulated by the frequency modulator" and that "a voltage-controlled reference oscillator coupled to the frequency modulator, where the voltage-controlled reference oscillator is modulated by the frequency modulator." As disclosed in the specification at page 17, one advantage from this configuration is that it compensates for the tendency of the phase-locked loop to remove the low-frequency portion of the modulation. The use of official notice for rejecting this element is therefore improper, because the frequency modulation is not being used simply to modulate frequency, as alleged by the Examiner, but rather to prevent the removal of the low-frequency portion of the modulation. The rejection of claim 21 and 22 based only on official notice is likewise improper. However, when corrected references are provided for the rejections under 35 U.S.C. 103, it may be possible for the Applicants to understand the basis for the Examiner's rejection. At present, it is not possible due to the errors in the office action, which render the basis for the rejection unclear.

In regards to the rejection of claims 9 and 16-18, the reference numbers for Koh (e.g. 33, 22, 32, etc.) are not shown or discussed in Koh, so it is not possible to traverse the rejection. However, the Applicants note that the Exmainer has not identified any suggestion or motivation to combine Koh with Bickley, as the reason for coupling the phase locked loop to the transmitted during a transmit cycle in Bickley and for decoupling during a receive cycle is to provide an offset reference signal, and not to lock the subharmonic local oscillator signal. However, when corrected references are provided for the rejections under 35 U.S.C. 103, it may be possible for the Applicants to understand the basis for the Examiner's rejection. At present, it is not possible due to the errors in the office action, which render the basis for the rejection unclear.

CONCLUSION

In view of the foregoing remarks and for various other reasons readily apparent, Applicant submits that all of the claims now present are allowable, and withdrawal of the rejections and a Notice of Allowance are courteously solicited.

If any impediment to the allowance of the claims remains after consideration of this amendment, a telephone interview with the undersigned at (214) 969-4669 is hereby requested so that such impediments may be resolved as expeditiously as possible.

No additional fee is believed to be due. If any applicable fee or refund has been overlooked, the Commissioner is hereby authorized to charge any fee or credit any refund to the deposit account of Akin, Gump, Strauss, Hauer & Feld, L.L.P., No. 01-0657.

Respectfully Submitted,

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